EX PARTE OR LATE FILED

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

DOCKET FILE COPY ORIGINAL

In the Matter of	
Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems	PR Docket No. 93-61 RM-8013

EX PARTE COMMENTS OF MFS NETWORK TECHNOLOGIES, INC. AND TEXAS INSTRUMENTS INCORPORATED

Pursuant to Section 1.1206 of the Commission's Rules,[1/] MFS Network Technologies, Inc. and Texas Instruments, Incorporated ("MFS/TI"), by their undersigned counsel, hereby jointly submit these brief *ex parte* comments in the above-captioned proceeding. These *ex parte* comments are submitted in support of MFS/TI's alternative spectrum allocation proposal that reduces the amount of spectrum proposed in the Commission's Notice to be devoted exclusively to "wide-area"[2/] pulse ranging automatic vehicle monitoring ("AVM")[3/] systems from two 8

1/ 47 C.F.R. § 1.1206 (1992).

2/ MFS/TI agrees with Hughes Aircraft Company that the "wideband"/"narrowband" terminology for AVM/AVI systems does not accurately reflect the differences between the pulse-ranging AVM system proposed by Pactel Teletrac and others, and other AVM technologies. Indeed, such "wideband" systems often occupy 4 MHz or 6 MHz of spectrum while some "narrowband" technologies, such as the MFS/TI TIRIS™-based Tag-Reader system, occupy 6 MHz or more of spectrum. (TIRIS™ is a trademark of Texas Instruments, Incorporated.) Accordingly, MFS/TI urges the Commission to adopt Hughes' recommendation that AVM or location monitoring systems ("LMS") be classified as "local-area" and "wide-area" rather than (continued...)

MHz spectrum blocks to only one 8 MHz spectrum block to such systems and permitting all other AVM technologies to share the remaining available contiguous 18 MHz of spectrum.[4/] MFS/TI also believe that, contrary to the suggestion of some parties, the Commission should not consider allocating spectrum in the 902-928 MHz band to Part 15 low power radio frequency devices or otherwise giving such users preferential use of the spectrum. Such proposals are outside the scope of the Commission's Notice in this proceeding and the adoption of such amendments would not serve the public interest.

MFS/TI believe it necessary to submit these comments to respond to issues raised in numerous other *ex parte* filings and discussions of other interested parties that have taken place since the close of the reply comment round in this proceeding. Together, the *ex parte* statements made to date underscore the entrenched views of several parties on the appropriate segmentation of the 902-928 MHz band in permanent AVM rules. While numerous parties cogently articulate positions that will favor their specific AVM technology, none of the proposals offered attempts to reconcile the disparate needs of the users of the band. In these brief joint *ex parte* comments, MFS/TI refocus the attention of the Commission and all parties to this proceeding on the need

---

[2/](...continued)
"wideband" and "narrowband." *See* Comments of Hughes Aircraft Corporation at 6-7.

[3/] For purposes of this *ex parte* filing, MFS/TI uses the term "AVM" to refer to all AVM, automatic vehicle identification ("AVI"), location and monitoring services ("LMS") and other Intelligent Vehicle Highway Services ("IVHS").

[4/] If the Commission decides to further segregate the use of the remaining 18 MHz, at a minimum, at least 12 MHz of contiguous spectrum should be available for shared use of "local-area" non-pulsing and other AVM systems.

to adopt a compromise spectrum proposal and offer additional detail in support of the plan set forth in MFS/TI's joint comments and joint reply comments.[5/]

I. THE COMPETING PROPOSALS FOR SEGMENTING THE 902-928 MHz BAND

To date, the Commission has heard extensively from those few parties that generally support a plan that would fragment the 902-928 MHz band into two non-contiguous spectrum blocks of 8 MHz set aside for the exclusive use of wide-area pulse-ranging systems, leaving a limited 6 MHz block of spectrum between the two 8 MHz blocks, and two scant 2 MHz spectrum blocks on either side of the 8 MHz blocks.[6/] Under the 2-8-6-8-2 segmentation plan set forth in the Commission's Notice and initially proposed by Pactel Teletrac, 16 of the available 26 MHz of spectrum -- or approximately 60% -- would be reserved for the exclusive use of wide-area systems, leaving only 10 MHz of non-contiguous spectrum for all other AVM technologies to share. Parties opposing that view, including Amtech Corporation and PinPoint Communications, have proposed that either the entire 902-928 MHz band be available for shared use by all AVM systems[7/] or that the Commission permit shared use of the entire band and

---

[5/] *See* Joint Comments of MFS/TI, PR Docket No. 93-61 (filed June 29, 1993); *see* also Joint Reply Comments of MFS/TI, PR Docket No. 93-61 (filed on July 29, 1993).

[6/] *See* Comments of North American Teletrac and Location Technologies, Inc., PR Docket No. 93-61 at 23-24, Appendix 1 (filed June 29, 1993); Comments of MobileVision, L.P., PR Docket No. 93-61 at 31 (filed June 29, 1993).

[7/] *See* Comments of Amtech Corporation, PR Docket No. 93-61 at 17-28 ("Comments of Amtech"); Reply Comments of Amtech Corporation, PR Docket No. 93-61 at 3-17 (filed July 29, 1993, corrected August 3, 1993); Comments of PinPoint Communications, Inc., PR Docket No. 93-61 at 9-10 (filed June 29, 1993).

create 4 MHz wide, low power "quiet zones."[8/] Southwestern Bell and other parties propose somewhat different schemes. Users and manufacturers of Part 15 low power radiofrequency devices argue that wide-area AVM systems cannot coexist with Part 15 users and therefore the Commission should look to find clear spectrum for such systems in another band, such as the Personal Communications Services 2 GHz frequencies, the emerging technologies band, or spectrum to be transferred from the government.[9/]

II. THE MFS/TI ALTERNATIVE SPECTRUM PROPOSAL SUBSTANTIALLY ACCOMMODATES ALL USERS OF THE BAND

The MFS/TI proposal appropriately balances the competing interests of the parties without unfairly favoring any particular company or technology. The MFS/TI alternative compromise plan is a simple, yet effective allocation proposal that reasonably accommodates all existing technologies on a shared basis without limiting the development of new technologies to pre-established spectrum blocks. Under the MFS/TI alternative proposal, an 8 MHz spectrum block would be devoted exclusively to wide-area AVM system use and the numerous, diverse non-wide-area AVM technologies will have flexible use, on a shared basis, of up to 18 MHz of contiguous spectrum suitable for non-wide area AVM use. Wide-area pulsing systems could also locate any narrowband link required by such systems in the 18 MHz block open for shared,

---

[8/] *See* Comments of Amtech at 17-28, Appendix A; Comments of PinPoint Communications, Inc., PR Docket No. 93-61, at 31-34 (filed June 29, 1993).

[9/] See Reply Comments of The Part 15 Coalition, PR Docket No. 93-61 at 7-9 (filed July 29, 1993).

non-wide-area AVM use.[10/] MFS/TI does not propose any change to the existing hierarchy set up by the Commission's Rules in which Part 15 devices must defer to licensed services (and indeed, any amendment to the contrary is not contemplated by the Notice in this rulemaking). Such devices currently operate under existing rules throughout the 902-928 MHz band. Although some parties have argued that Part 15 devices and wide-area pulsing AVM systems cannot co-exist, MFS/TI believe that Part 15 devices can continue to coexist with other AVM systems under existing rules.

A. The MFS/TI Proposal Will Encourage Competition in AVM Services and Continued Innovation in AVM Technologies

Under the current 2-8-6-8-2 proposal, all non-wide-area AVM systems would be squeezed into the middle 6 MHz block. This plan would greatly undermine utility of the myriad non-wide area AVM technologies that exist today and will severely inhibit their ability to incorporate technological innovations and meet consumer demand in the future.

To avoid these problems, MFS/TI's plan would make available to all local-area AVM technologies a contiguous 18 MHz block of spectrum -- the amount of spectrum needed to address the following important concerns:

1. Expansion into Higher Data Rates:

   Flexibility is necessary to use greater bandwidth to accommodate the increasingly higher data rates and data interchange. It is widely recognized that the current data rate of 300 kbaud is merely a transition step to higher data rates reaching 1 Megabaud in a few years. If the 902-928 MHz band is splintered into small protected user-specific frequency windows there will be no flexibility to

---

[10/] Accordingly, MFS/TI opposes allocating an additional narrowband block of 2 MHz or more for the special use of wide-area systems.

accommodate higher data rates that require greater bandwidth. Further growth and development of this band will therefore be stymied;

2. Lane Discrimination:

Flexibility is necessary to use a bandwidth greater than the proposed occupied 6 MHz for the purpose of lane discrimination in the existing MFS/TI TIRIS™-based system and similar systems. Since a downlink in those systems occupies 6 MHz, the reader transceivers located side-by-side for each adjacent lane in a toll plaza must use different frequencies to prevent one reader from interfering with and corrupting the data of an adjacent reader. Under the MFS/TI proposal, the 18 MHz available for shared use by local-area systems would enable two adjacent readers to avoid this interference problem by operating on non-overlapping spectrum (on up to a total of 12 MHz) with a desirable guard band of 6 MHz;

3. Interference Avoidance:

Flexibility is needed to avoid local interference sources when identifying the initial frequencies at a particular toll plaza. Prior to installing an AVM toll plaza site, the operator must conduct a radiofrequency survey to identify sources of interference, and their spectral position (*e.g.* paging operations at 932 MHz or cellular stations at 875 MHz). Based on this local interference survey, the AVM operator must select the reader frequencies that will ensure reliable system operation. The 18 MHz of contiguous shared spectrum identified in the MFS/TI proposed would permit two readers using 6 MHz of occupied bandwidth sufficient frequency separation to ensure some immunity from nearby fixed, high power stations; and

4. Maintaining Low Consumer Prices:

Flexibility is needed to permit local-area AVM systems occupying 6 MHz per lane to be deployed at costs low enough to be accepted by American consumers. Squeezing all non-wide-area AVM systems into a single 6 MHz band will compel local-area systems to add expensive spectrum filter components to prevent emissions into adjacent spectrum. An allocation of a wider spectrum segment to such systems will enable them to "roll of" unneeded emissions more efficiently and cost effectively thus, enhancing the utility of these systems for consumers and state governments.

As identified above, the MFS/TI proposal would serve the public interest both in promoting competition in AVM services and in allowing technological innovation to flourish.

B. The MFS/TI Plan Fairly Accommodates the Needs of All Interested Parties

Under the MFS/TI plan, wide-area pulse-ranging systems will have access to an 8 MHz block to be shared only with other wideband systems. MFS/TI has reason to believe that sharing among wide-area systems is both economically and technically feasible and practical.[11/] Pactel Teletrac nonetheless argues that an exclusive allocation is necessary because "two wideband pulse-ranging systems operating on the same channel in the same city are likely to interfere with one another."[12/] Unlike the current proposal, the MFS/TI plan proposes that use of the 902-928 MHz band by various AVM technologies will be limited only by the ability of operators to coordinate their frequencies and radio engineering techniques, rather than any artificial and anticompetitive constraints resulting from pre-established spectrum blocks.

Given the existing severe spectrum shortage, MFS/TI believe that the Commission should err on the side of open, shared spectrum allocations. Under the circumstances, the public interest requires that proponents of an exclusive allocation for one technology over the many other diverse technologies must meet a high standard. MFS/TI submit that this standard would best serve the Commission's mandate under the Communications Act to "encourage the provision of new technologies and services to the public." 47 U.S.C. § 157. In particular, proponents of a proposed exclusive allocation must be required to demonstrate that (1) spectrum sharing is

---

11/ MFS/TI concurs with PinPoint Communications that spectrum sharing among wide-area AVM systems is technically feasible. *See* Reply Comments of PinPoint Communications at 5-16. Joint Reply Comments of Texas Instruments, Incorporated and MFS Network Technologies, Inc., PR Docket No. 93-61 at 5-7 (filed July 30, 1993).

12/ *See* Comments of North American Teletrac and Location Technologies, Inc., PR Docket No. 93-61 at 24-26; Appendix 1 -- Engineering Analysis of Co-Channel Pulseranging LMS at 11.

technically infeasible and that other alternatives do not exist for such a system; and (2) even if spectrum sharing is technically impractical, compelling public interest reasons exist to foreclose competing technologies and dedicate spectrum to a single technology -- and indeed to a single provider. In this case, proponents of the 2-8-6-8-2 plan must be required to show why 60% of the available AVM spectrum should be dedicated to a single technology. No party to this proceeding has yet met this standard.

MFS/TI understands that, by definition, its alternative compromise proposal will not fully satisfy all the interests of all of the parties. Indeed, MFS/TI's proposal does not reflect its *own* preferred allocation scheme for AVM systems.[13/] Nevertheless, MFS/TI believe that its alternative compromise proposal is an equitable plan that will maximize the number of parties using available spectrum and offers most parties substantial advantages while minimizing significant disadvantages.

In an effort to expedite the resolution of these issues MFS/TI urge the Commission, if necessary, to require other parties to this proceeding to demonstrate why the MFS/TI alternative compromise proposal or a similar approach should not be implemented as a reasonable compromise under which all of the competing interests can be substantially accommodated. Clearly, achieving some degree of industry consensus will be critical to the successful sharing of the 902-928 MHz band and to the Commission's public interest mandate in this proceeding. Any specific frequency coordination procedures among wide-area systems and any other necessary rules -- including rules imposing strict construction schedules that would substantially

---

[13/] Absent other considerations, MFS/TI would prefer permanent rules that would permit sharing by all systems throughout the 902-928 MHz band.

diminish an AVM operator's ability to warehouse spectrum -- should be considered separately in supplemental proceedings. However, the future success of AVM technologies depends on the adoption of permanent spectrum rules in a reasonably short timeframe.

Given the relatively high standard that the Commission should impose on a proposal to dedicate spectrum for mutually exclusive use and the numerous diverse technologies developing in this area, MFS/TI submits that its alternate allocation proposal best meets the public interest and the industry's interests at this time.

III. CONCLUSION

For the foregoing reasons, MFS/TI urges the Commission to adopt the alternative proposal outline herein.

Respectfully submitted,

TEXAS INSTRUMENTS INCORPORATED
MFS NETWORK TECHNOLOGIES, INC.

Andrew D. Lipman
Catherine Wang
Swidler & Berlin, Chartered
3000 K Street, N.W.
Suite 300
Washington, D.C. 20007

Steven P. Reynolds
Legal Counsel
Texas Instruments Incorporated
13510 North Central Expswy
P.O. Box 655474, MS 241
Dallas, Texas 75265

Counsel for MFS Network Technologies, Inc.

Dated: December 2, 1993

119719.1